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53000   7590   10/01/2009

KENYON & KENYON LLP
1500 K STREET N.W.
WASHINGTON, DC 20005

EXAMINER
CHAO, MICHAEL W

ART UNIT	PAPER NUMBER
2442	

DATE MAILED: 10/01/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,904	10/26/2006	Volker Sauermann	11884/495701	3937

TITLE OF INVENTION: METHOD OF ASSIGNING OBJECTS TO PROCESSING UNITS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	01/04/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: <u>Mail</u> Mail Stop ISSUE FEE
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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

_____ (Depositor's name)

_____ (Signature)

_____ (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,904	10/26/2006	Volker Sauermann	11884/495701	3937

TITLE OF INVENTION: METHOD OF ASSIGNING OBJECTS TO PROCESSING UNITS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	01/04/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHAO, MICHAEL W	2442	709-226000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❏ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❏ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE   (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❏ Individual ❏ Corporation or other private group entity ❏ Government

4a. The following fee(s) are submitted:

❏ Issue Fee

❏ Publication Fee (No small entity discount permitted)

❏ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❏ A check is enclosed.

❏ Payment by credit card. Form PTO-2038 is attached.

❏ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❏ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❏ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____   Date _____

Typed or printed name _____   Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,904	10/26/2006	Volker Sauermann	11884/495701	3937

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53000 7590 10/01/2009			CHAO, MICHAEL W

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DATE MAILED: 10/01/2009

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 143 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 143 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

	Application No.	Applicant(s)
Notice of Allowability	10/584,904	SAUERMANN, VOLKER
	Examiner	Art Unit
	Michael Chao	2442

*-- The **MAILING DATE** of this communication appears on the cover sheet with the correspondence address--*

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *8/08/2009*.

2. ☒ The allowed claim(s) is/are *5-9,12,15-18,22 and 24-35*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☒ All   b) ☐ Some*   c) ☐ None   of the:
       1. ☐ Certified copies of the priority documents have been received.
       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
       3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .
    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
       Paper No./Mail Date _____ .
   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)
1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____ .

/Andrew Caldwell/
Supervisory Patent Examiner, Art Unit 2442

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with Xiaomin Huang (Registration No. 64,892) on 9/14/2009 at 11:30 A.M. EST.

Amendments to the Claims

Please amend the claims as shown below.

1-4.   (Canceled).

5.   (Currently Amended) ~~The computer implemented method of claim1, wherein determining a first threshold and a second threshold of each of the processing units further comprises:~~ A computer implemented method of assigning objects to a plurality of processing units, each of the objects having an object size and an object load, the method comprising:

    a) for each of the processing units, setting a storage capacity threshold and a load capacity threshold to initial values according to actual storage capacity and load capacity of the respective processing units;

    b) calculating an index value of each object based on the object's size and the object's load;

    c) sorting the objects by their index values to provide a sequence of objects;

    d) selecting at least one processing units to assign objects to, for each selected processing unit,

        assigning as many of the objects to the processing unit as fit within the storage capacity threshold and the load capacity threshold of the respective processing unit, the objects being assigned in sequence, and

        removing the assigned object(s) from the sequence;

    e) revising the storage capacity threshold and load capacity threshold to new values based on a total number of the processing units to which objects are assigned and unused capacity of the selected processing units; comprising:

        [[d)]] determining a first largest gap between the aggregated size of objects being assigned to one of the selected processing units and the actual storage capacity of the processing unit,

        [[e)]] determining a second largest gap between the aggregated load of objects being assigned to one of the selected processing units and the actual load capacity of the processing unit,

        [[f)]] subtracting from the initial value of the storage capacity the first largest gap divided by the total number of selected processing units from the storage capacity to provide ~~the first~~ a revised storage capacity threshold, and

[[g)]] subtracting from the initial value of the load capacity the second largest gap divided by the total number of selected processing units from the load capacity to provide the second a revised load capacity threshold[[.]];

f) performing step d) again using the revised storage capacity threshold and the revised load capacity threshold.

6.   (Currently Amended) The computer implemented method of claim 1, further comprises: A computer implemented method of assigning objects to a plurality of processing units, each of the objects having an object size and an object load, the method comprising:

a) for each of the processing units, setting a storage capacity threshold and a load capacity threshold to initial values according to actual storage capacity and load capacity of the respective processing units;

b) calculating an index value of each object based on the object's size and the object's load;

c) sorting the objects by their index values to provide a sequence of objects;

d) selecting at least one processing units to assign objects to, for each selected processing unit,

assigning as many of the objects to the processing unit as fit within the storage capacity threshold and the load capacity threshold of the respective processing unit, the objects being assigned in sequence, and

removing the assigned object(s) from the sequence;

[[d)]] e) determining a total of the sizes of the objects,

[[e)]] f) determining a total of the loads of the objects,

[[f)]] g) determining a first difference between the total of the storage capacities of the processing units and the total of the sizes of the objects,

[[g)]] h) determining a second difference between the total of the load capacities of the processing units and the total of the load of the objects,

[[h)]] i) subtracting the first difference divided by the number of processing units from the initial value of the storage capacity to provide a first-revised storage capacity threshold,

[[i)]] j) subtracting the second difference divided by the number of processing units from the initial value of the load capacity to provide a second-revised load capacity threshold,

[[j)]] k) performing step 1 c) d) again, wherein the remaining storage capacity is determined by the difference between the aggregated size of the objects being assigned to the processing unit and the first revised storage capacity threshold, and the remaining load capacity is determined by the difference between the aggregated load of the objects being assigned to the processing unit and the second revised load capacity threshold,

[[k)]] l) if as a result of step 6 j) k) there is an excess amount of memory requirement for one of the selected processing units that surpasses the first revised storage capacity threshold, dividing the excess amount by the number of selected processing units and increasing the first revised storage capacity threshold by the result of the division, and

[[l)]] m) if as result of step 6 j) k) there is an excess load requirement for one of the processing units that surpasses the second revised load capacity threshold, dividing the excess load by the number of selected processing units and increasing the second revised load capacity threshold by the result of the division,

wherein steps 6 j), 6 k) and 6 l) k), l) and m) are performed repeatedly until there is no such excess amount of memory requirement and no such excess load requirement.

7.   (Currently Amended) The computer implemented method of claim 1, further comprising: A computer implemented method of assigning objects to a plurality of processing units, each of the objects having an object size and an object load, the method comprising:

a) for each of the processing units, setting a storage capacity threshold and a load capacity threshold to initial values according to actual storage capacity and load capacity of the respective processing units;

b) calculating an index value of each object based on the object's size and the object's load;

c) sorting the objects by their index values to provide a sequence of objects;

d) selecting at least one processing units to assign objects to, for each selected processing unit,

assigning as many of the objects to the processing unit as fit within the storage capacity threshold and the load capacity threshold of the respective processing unit, the objects being assigned in sequence, and

removing the assigned object(s) from the sequence;

[[d)]]e) stepwise varying the ~~first~~ storage capacity and ~~second thresholds~~ load capacity thresholds between respective ~~first and~~ second limits and the respective initial values,

[[e)]]f) performing ~~step 1 e) d)~~ for each ~~first~~ storage capacity and ~~second~~ load capacity threshold value, wherein the remaining storage capacity is the difference between the aggregated size of the objects being assigned to the processing unit and the ~~first~~ storage capacity threshold, the remaining load capacity is the difference between the aggregated load of the objects being assigned to the processing unit and the ~~second~~ load capacity threshold, and a statistical measure is calculated for the assignment of objects to the processing unit, and

[[f)]]g) selecting one of the assignments of objects to processing units based on the statistical measure.

8.   (Currently Amended) The computer implemented method of claim 7, wherein:

the ~~first~~ second limit of the ~~first~~ storage threshold is given by the aggregated size of the objects divided by the number of selected processing units,

~~the second limit of the first threshold is given by the storage capacity,~~

the ~~first~~ second limit of the ~~second~~ load threshold is given by the aggregated load of the objects divided by the number of selected processing units, ~~and the second limit of the second threshold is given by the load capacity.~~

9.   (Previously Presented) The computer implemented method of claim 7, wherein the statistical measure is calculated by calculation of a standard deviation or a variance of the totals of the indices of objects assigned to one processing unit.

10-11. (Cancelled)

12.   (Currently Amended) The computer implemented method of claim [[1]]5, wherein the index value of an object is calculated based on the sum of ~~the~~ normalized object size and normalized object load and based on the absolute value of a difference between the normalized object size and the normalized object load.

13-14. (Canceled).

15.   (Currently Amended) ~~The article of manufacture of claim 13, further comprising instructions to perform:~~ An article of manufacture, comprising a machine readable medium having instructions for assigning objects to a plurality of processing units, each of the objects having an object size and an object load, the instructions comprising:

a) for each of the processing units, setting a storage capacity threshold and a load capacity threshold to initial values according to actual storage capacity and load capacity of the respective processing units;

b) calculating an index value of each object based on the object's size and the object's load;

c) sorting the objects by their index values to provide a sequence of objects;

d) selecting at least one processing units to assign objects to, for each selected processing unit,

assigning as many of the objects to the processing unit as fit within the storage capacity threshold and the load capacity threshold of the respective processing unit, the objects being assigned in sequence, and

removing the assigned object(s) from the sequence;

e) revising the storage capacity threshold and load capacity threshold to new values based on a total number of the processing units to which objects are assigned and unused capacity of the selected processing units; comprising:

[[d)]] determining a first largest gap between the aggregated size of objects being assigned to one of the selected processing units and the actual storage capacity of the processing unit,

[[e)]] determining a second largest gap between the aggregated load of objects being assigned to one of the selected processing units and the actual load capacity of the processing unit,

[[f)]] subtracting from the initial value of the storage capacity the first largest gap divided by the total number of selected processing units from the storage capacity to provide ~~the first~~ a revised storage capacity threshold, and

[[g)]] subtracting from the initial value of the load capacity the second largest gap divided by the total number of selected processing units from the load capacity to provide ~~the second~~ a revised load capacity threshold.

f) performing step d) again using the revised storage capacity threshold and the revised load capacity threshold.

16.   (Currently Amended) ~~The article of manufacture of claim 13, further comprising instructions to perform the steps of:~~ An article of manufacture, comprising a machine readable medium having instructions for assigning objects to a plurality of processing units, each of the objects having an object size and an object load, the instructions comprising:

a) for each of the processing units, setting a storage capacity threshold and a load capacity threshold to initial values according to actual storage capacity and load capacity of the respective processing units;

b) calculating an index value of each object based on the object's size and the object's load;

c) sorting the objects by their index values to provide a sequence of objects;

d) selecting at least one processing units to assign objects to, for each selected processing unit,

assigning as many of the objects to the processing unit as fit within the storage capacity threshold and the load capacity threshold of the respective processing unit, the objects being assigned in sequence, and

removing the assigned object(s) from the sequence;

[[d)]]e) determining a total of the sizes of the objects,

[[e)]]f) determining a total of the loads of the objects,

[[f)]]g) determining a first difference between the total of the storage capacities of the processing units and the total of the sizes of the objects,

[[g)]]h) determining a second difference between the total of the load capacities of the processing units and the total of the load of the objects,

[[h)]]i) subtracting the first difference divided by the number of processing units from the initial value of the storage capacity to provide a ~~first~~ revised storage capacity threshold,

[[i)]]j) subtracting the second difference divided by the number of processing units from the initial value of the load capacity to provide a ~~second~~ revised load capacity threshold,

[[j)]]k) performing step ~~13 c)~~ d) again, wherein the remaining storage capacity is determined by the difference between the aggregated size of the objects being assigned to the processing unit and the ~~first~~ revised storage capacity threshold, and the remaining load capacity

is determined by the difference between the aggregated load of the objects being assigned to the processing unit and the ~~second~~ revised load capacity threshold,

[[k)]]l) in case that as a result of ~~step 16 j)~~ k) there is an excess amount of memory requirement for one of the selected processing units that surpasses the revised storage capacity ~~first~~ threshold, dividing the excess amount by the minimum number of processing units and increasing the revised stroage capacity ~~first~~ threshold by the result of the division, and

[[l)]]m) in case that as a result of ~~step 16 j)~~ k) there is an excess load requirement for one of the processing units that surpasses the revised load capacity ~~second~~ threshold, dividing the excess load by the ~~minimum~~ number of processing units and increasing the revised load capacity ~~second~~ threshold by the result of the division,

wherein steps ~~16 j), 16 k) and 16 l)~~ k), l) and m) are performed repeatedly until there is no such excess amount of memory requirement and no such excess load requirement.

17.   (Currently Amended) ~~The article of manufacture of claim 13, further comprising instructions to perform the steps of:~~ An article of manufacture, comprising a machine readable medium having instructions for assigning objects to a plurality of processing units, each of the objects having an object size and an object load, the instructions comprising:

a) for each of the processing units, setting a storage capacity threshold and a load capacity threshold to initial values according to actual storage capacity and load capacity of the respective processing units;

b) calculating an index value of each object based on the object's size and the object's load;

c) sorting the objects by their index values to provide a sequence of objects;

d) selecting at least one processing units to assign objects to, for each selected processing unit,

assigning as many of the objects to the processing unit as fit within the storage capacity threshold and the load capacity threshold of the respective processing unit, the objects being assigned in sequence, and

removing the assigned object(s) from the sequence;

[[d)]]e) stepwise varying the ~~first~~ storage capacity and ~~second~~ load capacity thresholds between ~~respective first and~~ second limits and the respective initial values,

[[e)]]f) performing step 13 e) c) for each first storage capacity and second load capacity threshold value, wherein the remaining storage capacity is the difference between the aggregated size of the objects being assigned to the processing unit and the first storage capacity threshold, the remaining load capacity is the difference between the aggregated load of the objects being assigned to the processing unit and the second load capacity threshold, and a statistical measure is calculated for the assignment of objects to the processing unit, and

[[f)]]g) selecting one of the assignments of objects to processing units based on the statistical measure.

18.   (Currently Amended) The article of manufacture of claim [[13]]15, further comprising instructions to calculate the index value of an object on the basis of the sum of the normalized object size and normalized object load and on the basis of the absolute value of the difference of normalized object size and normalized object load.

19-21. (Canceled) .

22.   (Currently Amended) The blade server of claim 21, comprising the balancing instructions to perform: A blade server comprising executable instructions, which when executed cause a processor associated with the blade server to execute a method for dynamically assigning objects to a plurality of blade servers, each one of the objects having an assigned index that is based on object size and object load, the method comprising:

a) for each of the processing units, setting a storage capacity threshold and a load capacity threshold to initial values according to actual storage capacity and load capacity of the respective processing units;

b) calculating an index value of each object based on the object's size and the object's load;

c) sorting the objects by their index values to provide a sequence of objects;

d) selecting at least one processing units to assign objects to, for each selected processing unit,

assigning as many of the objects to the processing unit as fit within the storage capacity threshold and the load capacity threshold of the respective processing unit, the objects being assigned in sequence, and

removing the assigned object(s) from the sequence;

e) revising the storage capacity threshold and load capacity threshold to new values based on a total number of the processing units to which objects are assigned and unused capacity of the selected processing units; comprising:

[[d)]] determining a first largest gap between the aggregated size of objects being assigned to one of the selected processing units and the actual storage capacity of the processing unit,

[[e)]] determining a second largest gap between the aggregated load of objects being assigned to one of the selected processing units and the actual load capacity of the processing unit,

[[f)]] subtracting from the initial value of the storage capacity the first largest gap divided by the total number of selected processing units from the storage capacity to provide the first a revised storage capacity threshold, and

[[g)]] subtracting from the initial value of the load capacity the second largest gap divided by the total number of selected processing units from the load capacity to provide the second a revised load capacity threshold[[.]];

f) performing step d) again using the revised storage capacity threshold and the revised load capacity threshold.

23.   (Cancelled)

Please add the new claims as follows:

24.   (New) The computer implemented method of claim 5, wherein the index values of the objects and the object sequence are saved and reused for each iteration of assigning operation.

25.   (New) The computer implemented method of claim 6, wherein the index value of an object is calculated based on the sum of normalized object size and normalized object load and based on the absolute value of a difference between the normalized object size and the normalized object load.

26.　　(New) The computer implemented method of claim 6, wherein the index values of the objects and the object sequence are saved and reused for each iteration of assigning operation.

27.　　(New) The computer implemented method of claim 7, wherein the index value of an object is calculated based on the sum of normalized object size and normalized object load and based on the absolute value of a difference between the normalized object size and the normalized object load.

28.　　(New) The computer implemented method of claim 7, wherein the index values of the objects and the object sequence are saved and reused for each iteration of assigning operation.

29.　　(New) The article of manufacture of claim 15, wherein the index values of the objects and the object sequence are saved and reused for each iteration of assigning operation.

30.　　(New) The article of manufacture of claim 16, further comprising instructions to calculate the index value of an object on the basis of the sum of normalized object size and normalized object load and on the basis of the absolute value of the difference of normalized object size and normalized object load.

31.　　(New) The article of manufacture of claim 16, wherein the index values and the object sequence are saved and reused for each iteration of assigning operation.

32.　　(New) The article of manufacture of claim 17, wherein the index values and the object sequence are saved and reused for each iteration of assigning operation.

33.　　(New) The article of manufacture of claim 17, further comprising instructions to calculate the index value of an object on the basis of the sum of normalized object size and normalized object load and on the basis of the absolute value of the difference of normalized object size and normalized object load.

34.　　(New) The article of manufacture of claim 17, wherein:

the second limit of the storage threshold is given by the aggregated size of the objects divided by the number of selected processing units,

the second limit of the load threshold is given by the aggregated load of the objects divided by the number of selected processing units.

35.   (New) The article of manufacture of claim 17, wherein the statistical measure is
calculated by calculation of a standard deviation or a variance of the totals of the index values
of objects assigned to one processing unit.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

Leinberger (cited in prior office action dated 07/06/2009) discloses multi capacity bin packing, which is substantially identical to the elements a-d of claim 5 (allowed claim 1). Leinberger does not teach the additional elements of claim 5, or more specifically "revising the storage capacity threshold and load capacity threshold to new values based on a total number of the processing units to which objects are assigned and unused capacity of the selected processing units".

Walser (cited in prior office action dated 07/06/2009) discloses the general concept of hysteresis and as such suggests that inputs may be revised based on the optimality of the output. Walser does not teach multi variable bin packing taught in Leinberger and does not state nor suggest the specifics of "determining a first largest gap, a second largest gap, subtracting from the initial value of the storage and load capacity of the first largest gap divided by the total number of selected processing units."

Kang (cited in prior office action dated 07/06/2009) discloses a specific method of revising the solution for the last bin of a plurality of bins to optimize the solution; in the context of single variable bin packing. While this is in general a revision, it does not teach the specifics of "determining a first largest gap, a second largest gap, subtracting from the initial value of the storage and load capacity of the first largest gap divided by the total number of selected processing units."

Claim 5 (allowed claim 1) is therefore distinguishable over the prior art of record.

Independent claims 6, 7, 15, 16, 17 and 22 are also allowable under similar reasoning.

Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Chao whose telephone number is (571)270-5657. The examiner can normally be reached on 8-4 Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on (571)272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C./
Examiner, Art Unit 2442

/Andrew Caldwell/
Supervisory Patent Examiner, Art Unit 2442